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NOTIFICATION OF TRANSMITTAL OF COPIES OF TRANSLATION OF THE INTERNATIONAL PRELIMINARY **EXAMINATION REPORT** (PCT Rule 72.2)

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Date of mailing (day/month/year) 14 October 2004 (14.10.2004)	
Applicant's or agent's file reference PH-1733-PCT	IMPORTANT NOTIFICATION
International application No. PCT/JP2003/001917	International filing date (day/month/year) 21 February 2003 (21.02.2003)
Applicant KUMIAI CH	HEMICAL INDUSTRY CO., LTD. et al

1. Transmittal of the translation to the applicant.

The International Bureau transmits herewith a copy of the English translation made by the International Bureau of the international preliminary examination report established by the International Preliminary Examining Authority.

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3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report.

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.



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Translation

PATENT COOPERATION TREATY

PCT Application PCT/JP2003/001917

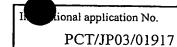
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PH-1733-PCT	FOR FURTHER ACTION SeeNotificationofTransmittalofInternational Preliminary Examination Report (Form PCT/IPEA/416)		
International application No.		rnational filing date (day/month/year) Priority date (21 February 2003 (21.02.03) 29 Ma	
PCT/JP03/01917	<u></u>		
International Patent Classification (IPC) or r C12N 15/29, 9/88, 15/60, 5/14,	A01H 5/00		
Applicant KUN	MIAI CHEMICAL INDU	STRY CO.,	LTD.
This international preliminary examand is transmitted to the applicant a	nination report has been preparaccording to Article 36.	ed by this Inter	national Preliminary Examining Authority
2. This REPORT consists of a total of	f sheets, inclu	ding this cover	sheet.
This report is also accompar	. 11 ANDIEVEC : a shoot	of the descript	ion, claims and/or drawings which have been ations made before this Authority (see Rule
These annexes consist of a t	total of 3 sheets		
3. This report contains indications rel	lating to the following items:		
I Basis of the report			
II Priority			
III Non-establishmen	t of opinion with regard to nov	elty, inventive s	step and industrial applicability
IV Lack of unity of ir			
V Reasoned stateme citations and expla	nt under Article 35(2) with reg anations supporting such stater	ard to novelty, inent	inventive step or industrial applicability;
VI Certain document	s cited		
VII Certain defects in	the international application		
VIII Certain observation	ons on the international applica	tion	
Date of submission of the demand	Da	Date of completion of this report	
02 April 2003 (02.0	04.03)	06	August 2003 (06.08.2003)
Name and mailing address of the IPEA/J	P Au	thorized officer	
Facsimile No.	Te	lephone No.	





I.	Basis	s of the re	port	· · ·	·	
1.	. With	regard to	o the elements of the inter	rnational application:*		
		the inte	ernational application as or	riginally filed		
	\boxtimes	the des	cription:			
	-	pages		1-50,5		, as originally filed
		pages				, filed with the demand
		pages	5	51,52	, filed with the letter of	23 July 2003 (23.07.2003)
	\boxtimes	the clair	me.		_	
	لحسكا	pages	115.	2-4,7	,	, as originally filed
		pages		2-4,7		er with any statement under Article 19
		pages				, filed with the demand
		pages	1,	,5,6,8	, filed with the letter of	
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		pages				, filed with the demand
		pages _			, filed with the letter of _	
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3.	With prelin	minary ex containe filed tog furnishe furnishe The sta internati	eamination was carried out ed in the international appose gether with the internation ed subsequently to this Au- ed subsequently to this Au- atement that the subsequently as filed he tement that the informati	at on the basis of the sequent plication in written form. In all application in computer puthority in written form. In authority in computer readab puently furnished written has been furnished.	nce listing: r readable form. ble form. sequence listing does not	t go beyond the disclosure in the
4.		tl tl	endments have resulted in he description, pages he claims, Nos he drawings, sheets/fig		الم والمدين	
5. *	Replac	beyond th <i>cement sl</i> i	he disclosure as filed, as ir heets which have been furi	indicated in the Supplement in the receiving Office of the control of the receiving Office of the receiving Office of the receiving Office of the control of	ital Box (Rule 70.2(c)).** Give in response to an invita	ntion under Article 14 are referred to
ı	in this and 70	is report :	as "originally flied win	d are not annexea to titl	is report since they as no	ot contain amendments (Rule 70.16
		•	nt sheet containing such a	ımendments must be referr	ed to under item I and anne	exed to this report.
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INTERNATIONAL PREMIUNARY EXAMINATION REPORT

In	onal application No.
	PCT/JP03/01917

tatement			
Novelty (N)	Claims	1-8	YE
	Claims		NO NO
Inventive step (IS)	Claims		YES
	Claims	1-8	NO NO
Industrial applicability (IA)	Claims	1-8	YES
	Claims		NO

Document 1: WO, 1-85970, A2 (Louisiana State University and Agricultural and Mechanical College), 15 November, 2001 (15.11.01), & EP, 1280928, A2, & AU, 200161358, A

Document 2: "A Naturally Occurring Point Mutation Confers Broad Range Tolerance to Herbicides That Target Acetolactate Synthase," (P. Bernasconi, et al.), J. Biol. Chem., 1995, Vol. 270, No. 29, pages 17381-17385 Document 3: "Intragenic Recombination in the CSR1 Locus of Arabidopsis," (G. Mourad, et al.), Mol. Gen. Genet., 1994, Vol. 243, No. 2, pages 178-184

Document 4: "Biosynthesis of 2-aceto-2-hydroxy Acids: Acetolactate Synthases and Acetohydroxyacid Synthases, (David Chipman, et al.), Biochim. Biophys. Acta, 1998, Vol. 1385, pages 401-419

Document 5: "Role of Tryptophanyl Residues in Tobacco Acetolactate Synthase," (C.K. Chong, et al.),

Biochem. Biophys. Res. Commun., 1999, Vol. 259, No. 1, pages 136-140

Document 6: "Amino Acid Residues Conferring Herbicide Tolerance in Tobacco Acetolactate Synthase," (C.K. Chong, et. al.), Biochem. Biophys. Res. Commun., 2000, Vol. 279, No. 2, pages 462-467

Document 7: "The Molecular Basis of Sulfonylurea Herbicide Resistance in Tobacco," (Kathleen Y. Lee, et al.), The EMBO J., 1988, Vol. 7, No. 5, pages 1241-1248

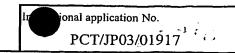
Claims 1-8

The subject matters of claims 1-8 do not appear to involve an inventive step in view of documents 1-7 cited in the ISR.

Document 1 describes *Oryza sativa*-herbicide tolerant ALSs (1) identical with the amino acid sequence represented by SEQ ID NO:2 of the present application except 171st His and 172nd Ser, (2) identical with the amino acid sequence represented by SEQ ID NO:4 of the present application except 171st His (identical also in the 548th mutation of the invention of the present application), (3) identical with the amino acid sequence represented by SEQ ID NO:6 of the present application except 171st His (identical also in the 627th mutation of the invention of the present application), and (4) identical with the amino acid sequence of SEQ ID NO:8 of the present application except 171st His (identical also in the 548th and 627th mutations of the invention of the present application).

Document 2 describes to the effect that a point mutant of an ALS acquires tolerance to sulfonylurea-based herbicides, imidazolinone-based herbicides, PC herbicides and triazolopyrimidine-based herbicides. Document 3 describes (1) to the effect that a point mutant of *Arabidopsis thaliana* ALS acquires herbicide tolerance, (2) to the effect that the resistance to PC-based herbicides can also be conferred because of a point-mutated site, and (3) to the effect that in both herbicide-tolerant *Arctium lappa* ALS and *Zea mays* ALS, Trp552 is mutated into Leu.

INTERNATIONAL PREMINARY EXAMINATION REPORT



Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of : V

Document 4 describes an alignment diagram of ALS sequences of various species, and shows active sites and sites of mutation to confer SU herbicide tolerance. The document also describes to the effect that the mutations of P173S of *Brassica napus*, P197S, S653N, M124I and R199E of *A. thaliana* and P196Q of *Nicotiana tabacum* confer herbicide tolerance.

Document 5 describes to the effect that in *Nicotiana tabacum* ALS, a mutation from Trp573 into Phe could confer herbicide tolerance.

Document 6 describes to the effect that in *Nicotiana tabacum* ALS, point mutations of Ala121, Pro187 and Ser652 could confer herbicide tolerance.

Document 7 describes to the effect that in a herbicide-tolerant mutant of Nicotiana tabacum ALS, Pro196 had been mutated into Gln and Ala, while Trp573 had been mutated into Leu.

As described in document 4, as of the priority date of the present application, the amino acid sequences of ALSs of various species, highly preservative sequence sites, active sites and sites of mutation to confer herbicide tolerance are publicly known. Furthermore, from documents 1-7, it is publicly known that if an ALS is point-mutated, it can have herbicide tolerance and acquire PC-based herbicide tolerance. From documents 2-7, it is publicly known that if Pro, Ser, Trp, Ala, Met or Arg is substituted in an amino acid sequence encoding an ALS, herbicide tolerance can be acquired. So, a person skilled in the art could have easily conceived of (1) mutating a site known to confer herbicide tolerance for further enhancing herbicide tolerance in the herbicide-tolerant mutants of *Oryza sativa* ALS described in document 1, and (2) mutating the portion of Pro, Ser, Trp, Ala, Met or Arg as the target of point mutation.

Moreover, as of the priority date of the present application, it is considered to have been well-known techniques in this field, (1) to integrate a publicly known DNA into a vector, (2) to integrate the vector into a host cell for transformation, and (3) to prepare an antibody against a peptide having a known sequence. So, it would have been easy to prepare a vector of a mutated ALS gene of *Oryza saliva*, and to transform the said vector into a host cell.

The effects achieved by the subject matters of claims 1-8 of the present application are considered to be predictable.